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ABSTRACT

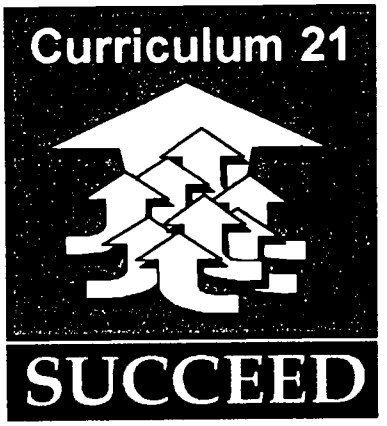
This document outlines the strategic plan developed in 1998 by the Southeastern University and College Coalition for Engineering Education (SUCCEED). The organizational structure, overall goals and milestones, and core strategies of the SUCCEED Project are described. Focus Team strategic plans for faculty development, outcomes assessment, student transitions, and technology-based curriculum delivery are discussed. Campus Implementation Team Strategic Plans for each of the member schools--Clemson University, Florida A&M University, Florida State University, Georgia Institute of Technology, North Carolina A&T State University, North Carolina State University, University of Florida, University of North Carolina at Charlotte, Virginia Polytechnic Institute and State University--are also presented. Coalition Service Team Strategic Plans for assessment, evaluation, and dissemination are also included. (WRM)

SUCCEED

SOUTHEASTERN UNIVERSITY AND COLLEGE COALITION FOR ENGINEERING EDUCATION

STRATEGIC PLAN

April 30, 1998



An NSF Engineering Education Coalition

Clemson University - Florida A&M University - Florida State University
Georgia Institute of Technology - North Carolina A&T State University
North Carolina State University - University of Florida
University of North Carolina at Charlotte
Virginia Polytechnic Institute and State University

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Introduction

In **SUCCEED**'s proposal to the NSF for five additional years of funding, **SUCCEED** provided the reasoning and evidence to support our approach to create sustainable reform of engineering education in the **SUCCEED** schools and beyond. Through review by the NSF, the **SUCCEED** Deans, **SUCCEED**'s External Advisory Board, and by **SUCCEED**'s own Guidance Team, that original proposal has been woven into the comprehensive strategic plan presented here. The rationale for this approach is not included here for brevity, and can be found in **SUCCEED**'s original proposal. This strategic plan also intentionally omits the finer details of implementation that make up **SUCCEED**'s tactical plan. A greater level of detail is provided in the appendix to clarify the plans of each of **SUCCEED**'s teams.

The strategic plan of **SUCCEED** is both a team effort and a living document. It was developed through the cooperation of not only **SUCCEED**'s team leaders, but also with grassroots input from all the team members. While this strategic plan will be updated at least annually, **SUCCEED**'s use of Total Quality Management software (*TQ Soft*) as a tool to help manage the coalition enables regular adjustment of the strategic plan. This document will begin with the strategies of the Coalition as a whole—our very structure has been designed to promote cross-functional communication and to strengthen the benefit of the Coalition. Then, both to provide the best overview of the Coalition's strategy and to avoid the redundancy of repeating the common elements of each campus-specific plan, the strategic plans of **SUCCEED**'s focus areas are presented next. Highlights of the campus-specific plans follow, with additional detail of these plans found in the appendix. Finally, the strategic plans of **SUCCEED**'s two support teams are presented. The appendix contains the detailed strategic plan as summarized in the hierarchical structure of TQ Soft, as well as endorsement letters from **SUCCEED**'s External Advisory Board and Deans Council.

SUCCEED's Organizational Structure—Its Foremost Strategy

The emphasis of **SUCCEED**'s activities is the implementation and institutionalization of innovations produced by **SUCCEED** and, where appropriate, other Coalitions and non-Coalition schools. Our model curriculum is the template, and programs that change the academic culture and are driven by comprehensive assessment and evaluation results will facilitate its implementation. Given **SUCCEED**'s vision of achieving sustainable and systemic curriculum reform, the following key observations are incorporated into our strategy:

1) **SUCCEED**'s role is not to fully fund comprehensive implementation of our curriculum model on each campus, but rather to lead and facilitate implementation on all campuses.

2) Acceptance of our model and broad participation in the implementation process will be needed on each campus; particularly important is strong buy-in by the department chairs and other leaders on each campus.

3) Each implementation of our curriculum model will differ, reflecting the diversity of the **SUCCEED** Colleges of Engineering.

4) The strength of the Coalition approach is in reduced development and testing cost, a support structure, shared resources, and the credibility of NSF funding.

Campus Implementation Teams

Based on these observations, **SUCCEED** has designed a team-based structure that empowers and supports each college in its efforts to implement our curriculum model. The heart of this structure is the **Campus Implementation Team (CIT)**. A **CIT** has been formed on each campus with the mission of developing and implementing a strategic plan that will produce sustainable and systemic curriculum renewal on the individual campus. Each **CIT** has developed a strategic plan for achieving systemic change over a five-year period—details of each campus' plan are provided later. Each campus implementation team has the role of leadership and facilitation. The team will also be involved in assessment and evaluation of their campus programs to guide its decisions and to provide input to the other **CIT**s. It is critical to recognize that each campus is different and the **CIT** will understand its campus and how the **SUCCEED** model should be adapted to it. Our strategy empowers the **CIT**s to effect curriculum renewal on their campuses; their activity is central to achieving our vision.

Coalition Focus Teams

An analysis of the strengths, weaknesses, and opportunities facing **SUCCEED** led the Guidance Team to identify the critical issues that must be addressed in order to achieve implementation of the **SUCCEED** curriculum model on all campuses. Identification of these critical elements was based on input from our stakeholders (e.g., Dean's Council, External Advisory Board, review team, department chairs, student advisory team, and **SUCCEED** PIs). Four areas were selected from this input. These core competencies are:

FOCUS AREAS

1. **Faculty Development**
2. **Outcomes Assessment**
3. **Student Transitioning**
4. **Technology-Based Curriculum Delivery**

A second set of teams has been formed, called **Coalition Focus Teams (CFTs)**, with the charge of facilitating the implementation of our innovations in each of these four critical areas. Each of the four **CFTs** has a member from each **SUCCEED** campus and these **CFT** members are also members of their home **CIT**. This matrix organization ensures that the **CFTs** are addressing the issues necessary for success on each campus and maximizing communications between campuses in each focus area. The four focus areas represent the essential elements of our curriculum model, and at the end of five years each campus will have these elements deployed in their curricula. The strategic plans of each of the **CFTs** are included later.

Coalition Service Teams

Two additional teams round out **SUCCEED**'s strategy for success through collaboration. Because these two teams provide planning assistance and expertise to all Coalition teams, they are called Coalition Service Teams. The Dissemination Team is charged with reaching out to the engineering education community to share **SUCCEED**'s experiences. Through the more active and focused dissemination strategies described later, **SUCCEED** will achieve a wider audience more rapidly. To gain acceptance for **SUCCEED**'s efforts and to guide internal planning, an Assessment and Evaluation team has also been formed. A wide range of complementary strategies will enable **SUCCEED** to provide the evidence necessary to facilitate change.

SUCCEED's Overall Goals and Milestones

SUCCEED defined a set of goals and milestones in preparing its proposal to the NSF for continued funding. While the path we are taking, our strategic plan, has been updated with knowledge and experience, we are still committed to reaching the same destination mapped out here.

SUCCEED GOALS

Overarching Goal — **Institute a sustainable version of our curriculum model on each SUCCEED campus.**

- **Create a strong first-year environment for students and develop a skill set for success in the workplace.**
- **Establish a comprehensive engineering faculty development program on each SUCCEED campus.**
- **Install continuous curriculum improvement processes that are driven by assessment of the quality of our graduates.**

- **Deploy a network-based collaborative learning environment on each SUCCEED campus.**

- **Identify best practices for the diffusion of educational innovation into engineering curricula.**

- **Market the very best SUCCEED products and processes beyond the Coalition through the establishment of partnerships.**

- **Assess and evaluate the success of our Coalition's activities.**

Part of our core strategy is to measure our progress towards reaching our goal set using the following key **SUCCEED** milestones.

KEY MILESTONES

- Development of an annually-updated strategic plan for implementing the **SUCCEED** curriculum model on each campus.

- 60% of the Coalition Engineering faculty will have participated in the faculty development program by the end of Year 10.

- 50% of the **SUCCEED** academic units will have undergone **SUCCEED**-facilitated curriculum renewal by the end of Year 10.

- Participation of 75% of **SUCCEED** departments in on-going collection of outcome assessment measure collection by the end of Year 10.

- Implementation of a transition program and a real-world multidisciplinary capstone design experience on each campus.

- A focused number of non-Coalition Colleges of Engineering will have identified a strategy to adopt **SUCCEED**'s innovations.

The core strategies to achieve these goals and reach our milestones are overviewed in the next section.

SUCCEED's Core Strategies

The mission of **SUCCEED** in the next phase of funding is very simple:

SUCCEED Mission: Implement our curriculum model on each of our campuses and facilitate its dissemination beyond the Coalition.

Eight core strategies have been identified to accomplish this mission and are outlined in Table 1. Our central strategy is to enable and empower a **Campus Implementation Team** on each campus to formulate strategic and tactical plans for curriculum renewal and to facilitate their implementation. Through the formation of the **CITs**, a local leadership team has been established that understands the local needs, is empowered to effect change, and shares the Coalition's vision for curriculum reform.

We believe the eight core strategies listed in Table 1 will lead to implementation of our curriculum model on each of the eight **SUCCEED** campuses and facilitate its dissemination beyond the Coalition. The detailed strategic plans of each of the four **Coalition Focus Teams**, the eight **Campus Implementation Teams**, the **Dissemination Team**, and the **Assessment and Evaluation Team** are given in the following sections. A more detailed view of **SUCCEED**'s plans is entered into AlliedSignal's total quality management software, ***TQ Soft***. A listing of this hierarchical set of goals, objectives, and tasks can be found in the appendix.

Table 1. CORE STRATEGIES

Strategies	Key Tactics
1. Give responsibility for sustainable and systemic curriculum reform to campus-based teams.	• Establish leadership team (**CIT**) on each campus. • Provide team with Coalition resources and support through Coalition Focus Teams and the A&E Team.
2. Obtain faculty buy-in for our model and empower them to implement it.	• Produce and disseminate faculty development material. • Establish a network-based learning environment. • Give faculty access to assessed and evaluated innovations. • Perform and communicate assessment and evaluation of our model's effectiveness.
3. Install continuous curriculum renewal processes and best practices in academic units.	• Actively disseminate **SUCCEED**'s Curriculum Innovation and Renewal Manual. • Develop, test, and benchmark metrics for student and graduate attributes.
4. Create an active learning environment in which students from diverse backgrounds are able to attain success.	• Substantiate the current research that indicates technology tools significantly enhance the learning of certain groups. • Establish a network-based collaborative environment. • Integrate tested multimedia courseware into curricula. • Develop and test asynchronous learning tools. • Train developers of technology-based learning tools.
5. Coordinate Coalition focus on the scale-up and mainstreaming of first-year-on-campus programs to assist student transition into the University.	• Transport successful Community College Transition programs. • Evaluation existing and test programs Coalition-wide. • Scale up and mainstream test "bridge" programs and expand women and minority peer mentoring programs.
6. Transport and scale up our practice and design products.	• Work with PIs of successful products to actively disseminate innovation. • Promote Coalition-wide links with industry.
7. Actively disseminate our curriculum model and its components beyond the Coalition through focused partnerships.	• Work closely with selected schools (Council of Schools) to implement our curriculum model. • Develop and execute dissemination plans for very best products/processes. • Promote access to **SUCCEED**'s products and processes through the Internet. • Establish partnerships with industry and other Coalitions.
8. Convince the engineering education community of the value of our model and its components.	• Perform ongoing Coalition-wide qualitative assessment. • Continue building a longitudinal database for quantitative assessment. • Research the diffusion of educational innovation.

SUCCEED's Coalition Focus Team Strategic Plans

As previously outlined, part of **SUCCEED**'s core strategy is the establishment of four Coalition-wide teams to ensure the implementation of the essential elements of our curriculum model. It is stressed that **Coalition Focus Teams (CFTs)** are service organizations and will provide support to each **Campus Implementation Team** as it implements our curriculum model. The matrix organization (each **CFT** member is also a member on her/his **CIT**) will encourage the sharing of experiences across campuses and further bond our colleges together as an enterprise. As industry has restructured and aligned its operations along core competencies rather than geographical boundaries, the focus areas similarly represent **SUCCEED**'s core competencies. The strategies of each of the four **CFT**s are outlined below.

Faculty Development

The plan of the Faculty Development **CFT** is to institutionalize faculty development programs that set the stage for widespread adoption of new and effective instructional methods and materials. The team's objectives are to provide training and continuing support to faculty members who teach engineering students, to promote a supportive institutional climate for improving engineering education, and to disseminate new instructional methods and materials among all the engineering education Coalitions and beyond. The faculty development program will be the principal vehicle for facilitating the widespread adoption of instructional materials and methods developed under Coalition sponsorship.

Team Mission: **Establish a comprehensive and sustainable engineering faculty development program on each SUCCEED campus.**

Team Milestone: Participation by more than 60% of the Coalition engineering faculty members in faculty development programs by the end of Year 10.

Objective 1: Prepare faculty members to implement effective instructional methods & provide continuous support.

The key strategy for achieving this objective is the education of faculty. This will be accomplished through introductory teaching workshops to new and experienced faculty as well as through topical workshops. In order to foster the sharing of good educational practices, teaching support networks will be established.

Objective 2: Promote a campus climate conducive to fulfilling the program mission.

Our approach to changing the campus climate is threefold. We will identify options for (1) the evaluation of teaching and (2) rewards and incentives for effective and innovative

teaching and will disseminate the options in printed and electronic form. We will educate those who influence academic policies about these options through Deans Council discussions and conference sessions. Finally, and most critically, we will support the development of teaching leaders who can design, deliver, and sustain faculty development programs for engineering on each campus.

Objective 3: Disseminate new instructional methods, materials, programs, and implementation strategies.

To adequately disseminate successful methods of engineering education, a variety of approaches are necessary. A WWW-based newsletter on teaching and links to instructional resources available electronically can reach a wide audience for little cost. However, to maximize the impact of such resources, **SUCCEED** Coalition conferences and a multi-Coalition conference will be used to focus attention on this area. Finally, as the **SUCCEED** model of faculty development is refined, the model itself will be disseminated.

Outcomes Assessment

SUCCEED's strategy in its outcomes assessment focus area is to assist degree programs in meeting the new ABET Engineering Criteria 2000 relative to outcomes assessment. The team strategy involves identification of best practices in outcomes assessment among engineering degree programs, development and pilot testing of new instruments filling gaps in present practices, dissemination of these practices, and of a process for using the results of outcomes assessment to improve degree programs.

Team Mission: **Lead engineering schools through the process of continuous curriculum improvement using outcomes assessment methods.**

Team Milestone: A report on best practices in outcomes assessment will be drafted and widely disseminated by Year 7.

Team Milestone: Participation of 75% of **SUCCEED** departments in on-going collection of outcomes assessment data by the end of Year 10.

Team Milestone: **SUCCEED** will test instruments that measure each of ABET's EC 2000 a-k attributes of **SUCCEED** graduates and will report annually to the engineering education community via conferences, workshops, and web sites.

Team Milestone: The Curriculum Innovation and Renewal Manual will be updated and merged with the findings on best practices on outcomes assessment measures and processes by the end of Year 10.

Team Milestone: 50% of the **SUCCEED** accredited programs will have undergone curriculum renewal by the end of Year 10 using a process recommended and reviewed by **SUCCEED**.

Objective 1: Develop best practices for Outcomes Assessment of engineering degree programs measuring the abilities of their graduates relative to ABET Engineering Criteria 2000.

The key strategy in the identification of best practices is to engage assessment experts from within the Coalition, from elsewhere in academia, and from industry to collaborate with engineering faculty responsible for implementing outcomes assessment processes. Based on tested instruments and measures at **SUCCEED** institutions, best practices will be disseminated to the engineering education community through conferences, workshops, and publications. The WWW will be used to encourage the sharing of methods and assessment experiences. Faculty, especially those who will implement outcomes assessment processes and curriculum improvement in their degree programs, will be trained through a workshop held independently and as part of assessment conferences.

Objective 2: Implement Curriculum Innovation and Renewal using Outcomes Assessment results

SUCCEED's experience in curriculum innovation and renewal in our first five years led to the development of a Curriculum Innovation and Renewal process in the form of a manual. This process will be improved in three ways—through the incorporation of the best practices from objective 1, through evaluation by assessment experts and users, and through the development of software to facilitate its use. The manual itself will be posted on the **SUCCEED** web site in order to facilitate its dissemination and use. Workshops will be conducted by succeed to assist degree programs in renewing their curricula based on outcomes assessment results.

Student Transitions

SUCCEED has had considerable success in improving the retention of minority students and community college transfer students, and, to a lesser extent, women students. This success has been attributed to active intervention programs, explicit skill development and statement of expectations, creation of peer support structures, early introduction to engineering, and improved teaching. A few key strategies are expected to make use of this expertise developed within **SUCCEED**. We will focus the bulk of our effort at gleaning the best practices in each of the transition areas. This will be done at a series of focused best practice workshops, making it possible to invite local champions from each campus to participate. In this way, the best practices will be both gathered for broader dissemination and more directly communicated to the most interested faculty.

Team Mission: **Facilitate/ disseminate/ implement strategies to assist students through the transitional phases of their engineering education experience.**

Team Milestone: Implementation of a transition program on each **SUCCEED** campus by the end of Year 10.

Team Milestone: Transport and implementation of a community college transition program to those schools with a large community college transfer pipeline by the end of Year 10.

Team Milestone: Implementation of a multidisciplinary capstone design experience on each campus.

The key strategies detailed above are summarized below.

- Benchmark existing efforts on **SUCCEED** campuses
- Hold a best practices workshop to bring current practitioners into contact with potential local champions on other campuses
- Determine costs and key elements suitable for scale-up
- Disseminate results of the workshop to reach a wider audience
- Work with local champions to pilot efforts on their campuses

This same set of strategies will be used to achieve each of the following objectives based on the related prior efforts by **SUCCEED** listed along with each objective.

Objective 1: Provide students access to real-world design experiences through multidisciplinary design courses.

Based on best practices in multidisciplinary design experiences.

Objective 2: Establish an early engineering identity and expand first-year transitioning.

Based on best practices in freshman "bridge" programs and peer mentoring programs.

Objective 3: Provide students opportunities to practice engineering.

Based on best practices in internships, co-ops, and international experiences.

The two remaining objectives of the Student Transitions team and the strategies to achieve them are identified below.

Objective 4: Assess and evaluate Student Transitions efforts.

A necessary complement to this core strategy of directly communicating best practices to interested local champions is to gather a comprehensive set of evidence of the effectiveness of these programs. This body of evidence will be critical to the widespread adoption of **SUCCEED**'s transition programs, especially beyond those who will be reached directly by the best practices workshops.

Objective 5: Provide a social/technical vehicle for networking women within academia and between academia and industry.

The strategy for achieving this objective is to leverage the similarities between initiatives aimed at enhancing opportunities for women and those initiatives aimed at enhancing opportunities for under-represented minorities. Economies of scale are expected to make such programs sustainable. Gender issues will be addressed within workshops and conferences sponsored by the Student Transitions team (student concerns) and the Faculty Development team (faculty issues).

Technology-Based Curriculum Delivery

At the heart of **SUCCEED**'s strategy for Technology-Based Curriculum Delivery is educating faculty and administrators about the proven benefits of existing technology. This strategy is threefold, addressing the education of the majority of faculty in the use of common technology that can positively impact the educational environment for students, the education of a smaller group of faculty who will develop instructional media of demonstrable quality for use by the first group, and the education of administrators as to the proven benefits of these technologies to facilitate their adoption.

Team Mission: Extend the reach and effectiveness of engineering education through the use of advanced technology.

Team Milestone: WWW tools workshop will be presented on each campus by the end of Year 7.

Team Milestone: Three Coalition-wide courses will be distance-delivered by Year 10.

Team Milestone: Videoconferencing will be used by the Guidance Team in Year 6.

Objective 1: Substantially enhance teacher-student and student-student communication using net-based collaborative environments for academic interaction.

The key strategy here is to create the widespread use of WWW tools and materials that can enhance the learning environment in a very cost-effective manner. A set of workshops will be used to train faculty in the development of WWW-based materials to promote the use of net-based learning environments. To facilitate the widespread adoption of such materials, a standard interface and set of tools will be established to reduce the effort required to adapt the materials to a given course.

Objective 2: Empower faculty to develop electronic media-based instructional content.

Objective 1 is addressed to the faculty at large. While the target group for Objective 2 is smaller, the Technology-Based Curriculum Delivery team feels that this group is no less important to the improvement of the learning environment through the use of technology. The key strategy to achieve this objective is to train developers in the best practices of the production educational media, including using a documentation standard and assessment techniques for technology-based learning environments. To do this, a set of courseware development workshops will be established.

Objective 3: Use net technologies to improve management operations throughout the Coalition.

Objective 3 has significant bearing on the institutionalization of the other two objectives. Through the strategy of educating the administrators of **SUCCEED** as a Coalition and the administrators of our colleges, we hope to gain greater awareness and support for the educational benefit of certain technologies. Recognizing that experience is the best teacher, we will facilitate the use of desktop videoconferencing and collaborative tools by the Coalition leadership. We will also deliver a workshop series on collaborative networking for administrators.

SUCCEED's Campus Implementation Team Strategic Plans

If systemic and sustainable engineering education reform is to occur on each campus, then the leadership on each campus must unite to guide the reform. This leadership must have a common vision, be empowered with the authority and resources to effect change, and view the educational process holistically. For these reasons, **SUCCEED** has formed a **Campus Implementation Team (CIT)** on each of our campuses to guide the institutionalization of our curriculum model. Each **CIT** is responsible for developing and facilitating the implementation of a campus-specific strategic plan that will result in systemic curriculum renewal.

The Coalition Focus Teams are constituted by representatives from each of the Campus Implementation Teams. Thus, the **CIT** plans for a given focus area are naturally coupled to the **CFT** plans in that same area. To discuss the comprehensive plans of each **CIT** would be repetitive. Rather the description given below highlights the adaptation of the

SUCCEED model to each campus' needs and mission. The complete details for each **CIT** plan can be found in Appendix I. Each CIT shares a common mission:

CIT Mission: **Implement the SUCCEED Curriculum Model in the unique environment of that CIT's campus.**

Clemson University

The Clemson CIT has worked in cooperation with a college-wide strategic planning body to integrate SUCCEED tenets into the college strategic plan. Clemson recently (1994-95) conducted a "zero-based" revision of all engineering curricula which incorporated many aspects of the SUCCEED curriculum model, and which sets the stage for completing the process over the next five years of SUCCEED. Outcomes assessment programs are in place in all curricula, the freshman curriculum has been redesigned, and some subject integration has been introduced. Further steps in integration are planned, and will be facilitated by the 1995 reorganization that merged 15 engineering and science faculties into a single College of Engineering and Science.

Faculty Development

Since Clemson has faculty development activities at the university level, the CIT strategy in this area is to coordinate with the university level activities, and supplement these with engineering/science specific programs including a new faculty orientation workshop. A Teaching Fellow program to recognize and reward exemplary teachers who will provide leadership in innovative and effective pedagogy within the college is being established, and additional forms of support for innovative and effective teaching will be developed.

Outcomes Assessment

While Clemson has a strong assessment program, the link between assessment measures and program objectives has not been as strong as it should be. Moreover, in some programs assessment results have not been systematically used in program enhancement. Thus, each program is more clearly defining program objectives and enhancing the assessment plan as needed to address desired outcomes. This revised outcomes assessment program will be integrated into the SUCCEED curriculum innovation and renewal process and to implement continuous curriculum improvement in all degree programs.

Student Transitions

Clemson's primary focus in this area is to incorporate appropriate elements from other SUCCEED schools to further enhance its freshman engineering program. This will include developing a mentoring program for engineering freshmen, and achieving further integration in the freshman curriculum. Clemson also plans to extend its already successful multidisciplinary / multi-campus design program and provide multidisciplinary experiences in all curricula, and to further enhance the international component of its curriculum.

Technology-Based Curriculum Delivery

Four key strategies stand out in this area. A universal computing pilot study will explore benefits of the networked, collaborative environment provided by student laptop computers. A complementary focus will be on faculty incorporation of ALN methods to enhance faculty/student collaboration. Sharing faculty expertise in courses collaboratively taught across SUCCEED institutions will be implemented, as will further use of technology to facilitate group projects involving spatially separated teams as in the multi-campus design efforts.

Florida A&M University—Florida State University

In implementing and institutionalizing a version of **SUCCEED** curriculum, FAMU-FSU sees the main challenge as one of educating faculty about the need for educational reform and about associated implementation processes. Accordingly, there is an emphasis on faculty training and faculty education in all four **SUCCEED** focus areas at FAMU-FSU. This emphasis will be manifested in the number of hands-on workshops to be organized and in the production of 30-minute multimedia clips that will supplement the workshops. The 30-minute clips will be made available at WWW sites dedicated to the focus areas. These WWW sites will constitute a comprehensive resource for FAMU-FSU faculty.

Faculty Development

FAMU-FSU is especially focused on the challenge of integrating good teaching practice with good research practice. Accordingly, separate workshops will be offered for faculty still working towards tenure and for senior faculty, in order to meet the special needs of these two groups. Teaching innovation awards will also be used to stimulate the adoption of new instructional systems by faculty.

Outcomes Assessment

The FAMU-FSU strategy in outcomes assessment is very direct and comprehensive—metrics to measure graduation rate, quality, and cost will be developed. These metrics will be applied in the spirit of continuous development to assess the performance of FAMU-FSU College of Engineering, and may be of value at other institutions. All BS programs at FAMU-FSU shall be renewed in accordance with **SUCCEED** curriculum model and ABET Engineering Criteria 2000.

Student Transitions

FAMU-FSU will implement a first year program that provides the freshman with the opportunity to actually explore engineering products and processes. The first year program shall use best practices identified by **SUCCEED** and other sources. In addition to the first year program, diagnostic exams will be devised for **SUCCEED**'s Stage 1 (freshman/ sophomore years), Stage 2 (junior/senior years), and Stage 3 (workplace) so as to provide feedback on student performance through the various stages of the curricula.

Technology-Based Curriculum Delivery

FAMU-FSU sees TBCD as a means of making instructional processes and student learning more effective and more efficient. Accordingly, computer networking will be used maximally to effect instructional process flexibility. In addition, there are two major tasks planned by the FAMU-FSU **CIT** that are not common to all **SUCCEED CIT** plans—implementation of a College-wide student advising tool and development of standardized exit exams in basic mathematics courses across the two universities.

Georgia Institute of Technology

Georgia Tech has a number of defining characteristics that impact upon the strategies chosen to implement the **SUCCEED** curriculum model. Georgia Tech has the nation's largest engineering program in terms of degrees awarded. The strategies selected by the **CIT** leverage Georgia Tech's size and resources to better facilitate educational reform. Since it is the only publicly funded engineering college in the state of Georgia, Georgia Tech has a transfer program with eight Georgia universities and a dual degree program with about twenty universities, both within the state and nationally. Also affecting a number of the **CIT**'s strategies is the impending conversion of Georgia Tech's academic calendar from a quarter-based system to a semester-based system.

Faculty Development

Because of the size of the institution and its faculty, a workshop describing how to be an effective faculty member focusing on the needs of new faculty is of particular concern, and a faculty steering team will be used to provide guidance to faculty development efforts. The faculty steering team is expected to create communication channels to the faculty at large. Another strategy is to prepare the faculty to meet the needs of students during the semester conversion through a seminar on the role of faculty advising in that process.

Outcomes Assessment

Since the institute began phasing in learning outcomes assessment in 1992, and was an ABET EC 2000 pilot institution, their strategies in this area are focused on the improvement of the already well-developed assessment methods. The team will develop an up-datable psychometric profile of academic and non-academic variables to enhance prediction of success in engineering curricula. An assessment seminar will be established to aid in the internal dissemination of developments in this area.

Student Transitions

One of Georgia Tech's strengths is its Office of Minority Educational Development and the very successful transition program (Challenge) that it offers freshman minority students. The **CIT**'s strategy is to leverage this expertise in three ways. The existing program will serve as a model for the creation of first year experiences for dual degree, transfer, and graduate students. In addition, the current freshman year transitional

experience will be offered to a wider population. Finally, the program itself as offered to under-represented groups will be extended to a year-long program.

Technology-Based Curriculum Delivery
Since Georgia Tech recently instituted the requirement that all incoming students purchase a computer, the **CIT**'s strategies in this area are designed to take advantage of this fact. The team plans to improve Mechanics course using technology enhancement, survey the use of existing technology by sophomore students to assist with learning engineering mechanics, and create modules for a semester-based courses in statics that utilize existing technologies.

North Carolina A&T State University

North Carolina A&T State University is one of the smaller Coalition schools, with 1600 undergraduate students enrolled. Since 86% of that enrollment is African-American, it is a major educator of minority students. The strategies chosen by the NC A&T Campus Implementation Team are strongly influenced by its current status—the University has no formal faculty development program, a freshman transition program of small scope, and transfer students typically enter the college with few or no engineering credits. The dominant factor in strategy selection is the fact that NC A&T has limited resources.

Faculty Development
The lack of any formal program and the lack of resources to create one have led to a strategy that must integrate the development of faculty expertise in grantsmanship with the development of faculty expertise in teaching. It is expected that only through this strategy can faculty both be trained in sound educational methods as well as gain the skills to find the resources to fund educational innovation. This program will certainly include an orientation program for new faculty.

Outcomes Assessment
Even acknowledging the limited resources of the university, the driving force provided by ABET's new EC 2000 is expected to provide enough leverage to achieve significant gains in this area. All NC A&T departments will be trained in the **SUCCEED** process of curriculum renewal, and the team plans to facilitate assessment and curriculum reform in all programs in the college.

Student Transitions
The NC A&T **CIT** is committed to implementing a program for new freshmen, a formal transfer program, and a transfer student mentoring program. Limited resources will require working with the focus team in this area to select only those elements that are sustainable. The team plans to adopt industry collaborative strategies to alleviate the resource problem—in particular, they plan to establish partnerships between North Carolina biotechnology companies and NC A&T.

Technology-Based Curriculum Delivery

While this focus area holds promise for significant improvement of the educational process, there are significant cost concerns in this area. The team's strategy is critically dependent on the interaction within the focus team to determine the most cost-effective solutions in this area. The team's key strategy to initiate progress in this area is to work closely with selected faculty with relevant expertise to engender slow, sustainable growth.

North Carolina State University

The strong **SUCCEED** presence at North Carolina State University has led to a general structure of innovation that is very parallel to the plans of the focus areas. The university has particular strength and focus to its efforts in faculty development and student transitions due to **SUCCEED** leadership and activity in these areas.

Faculty Development

Richard Felder of the National Effective Teaching Institute and others at NC State have taught the introductory Teaching Effectiveness Workshop, which has reached nearly half of the faculty at the institution. In addition to their strong commitment to the plans of the Faculty Development **CFT**, of which Felder is one of the Co-Directors, the NC State **CIT** plans to collaborate with NC State's new Center for Learning and Teaching as an important strategy. The team also plans to develop specialized workshop on diversity. The workshop is expected to have significant impact beyond NC State as well.

Outcomes Assessment

The ECE department will serve as a guide to developing a strategy for revising the curricula in other departments. In addition to using the curriculum renewal process in some of its curricula, a strategy of the **CIT** at NC State is to design new programs using the same principles. An honor's program and a five-year MS program in EE and CPE will be designed.

Student Transitions

The NC State **CIT** plans to capitalize on the success its past **SUCCEED** innovation in this area. The existing, successful Summer Transition Program will be expanded to reach a broader population of students. The established mentoring program will be expanded to a broader freshman population. The team will continue to scale NC State's Introduction to Engineering course while mainstreaming the best components of the freshman pilot courses. The team also plans to evaluate and incorporate components of Virginia Tech's Writing Across the Curriculum programs.

Technology-Based Curriculum Delivery

The resources of NC State and the UNC system bring some special strategies to bear in this area. The team plans to enhance the faculty's ability to incorporate use of WWW-based course materials in curricula by coordinating the acquisition and deployment of an integrated set of supportable tools and guidelines. This effort will be strongly leveraged

by local resources. The team also plans to expand distance-based course offerings and course sharing to selected four-year campuses and community colleges as well as scale up Internet-based engineering course offerings. The implementation of a Coalition-wide web-based conferencing system that will facilitate forum discussions in courses is also planned.

University of Florida

The University of Florida **CIT** has a close relationship with the college's strategic planning team, giving the team not only an improved chance of success, but also providing the team with the opportunity to influence the allocation of a larger pool of resources. The support afforded by the State of Florida's Teaching Improvement Program (adding $5,000 to the base salary for excellence in undergraduate education) and by the line-item allocation of funding for engineering educational reform have created a climate in which a variety of innovations have flourished. At the core of the UF **CIT**'s strategy is capitalizing on the strong program of educational reform that has already been developed.

Faculty Development

The educational climate at University of Florida that benefited **SUCCEED** in its first five years of operation also led to the institution of faculty support resources such as the University Center for Excellence in Teaching. While working with this body to avoid duplication of effort and take advantage of its efforts, the UF **CIT** also plans to institute a Faculty Development Office within the College of Engineering that will facilitate the dissemination and introduction of **SUCCEED** products and processes college-wide. This office will coordinate a Faculty Orientation Program and a Teaching Fellow Program, both to be developed by the team.

Outcomes Assessment

The editor of **SUCCEED**'s Curriculum Innovation and Renewal manual, Jack Elzinga, is on the faculty at UF, and has been a driving force in the aggressive strategy of facilitating a process of continuous curriculum development and improvement for all 12 departments in the College of Engineering. The team plans to integrate their efforts at the College level as well, studying and redesigning the College-level outcomes assessment procedures.

Student Transitions

Here again, the primary strategy is to leverage the considerable success and expertise developed in the first five years of **SUCCEED**. UF has invested the resources to find the optimum size for the highly successful Integrated Product and Process Design (IPPD) program, and plans to refine and improve the efficiency of the program with a target of 25 projects and 150 students. The program will be integrated into the regular curriculum and an official catalog entry will be established for the course. The team plans to refine its Community College transfer program in an effort to maintain its benefit while reducing

its cost. The team plans also to provide entering minority freshmen with college survival skills and increase their success and retention rates in engineering using the STEPUP (Successful Transition through Enhanced Preparation for Undergraduate Programs) model. Aggressively committed to this area of development, the team plans to introduce an internationalization program (using the Clemson model) and develop a professional communication component across the curriculum as well as to explore the deployment of the **SUCCEED** QIP (Quality Improvement Project) as a complement to the IPPD program to reach a larger number of students.

Technology-Based Curriculum Delivery

In this area, the UF **CIT** strategy has a focus not only on institutionalizing products and courses (using the Visualizations in Materials CD-ROM and the Emulated Flexible Manufacturing Laboratory (EFML)) but also on finding applications of Asynchronous Learning Networks (ALNs) in faculty development, advising, and mentoring.

The UF **CIT** has developed an aggressive program to promote the adoption and dissemination of **SUCCEED** efforts in the four focus areas. It is planned to hold annual **SUCCEED** Expositions – day-long poster sessions – featuring **SUCCEED** activities at UF and across the Coalition. Furthermore each department in the UF college of Engineering has agreed to extend the **SUCCEED** matrix structure to the departmental level by naming four (4) members of its curriculum committee as contact persons for each of the four (4) **SUCCEED** focus areas. These representatives will be invited to participate in **CIT** activities in the respective areas and this will provide an ideal mechanism for diffusion **SUCCEED** innovation to the departments.

University of North Carolina at Charlotte

The UNC Charlotte **CIT** has the primary strategy of cooperating with the College's Strategic Planning and Resources Team (SPART) to leverage time, talent, and resources. The strategic planning effort that led to the development of the SPART team is giving rise to the development of a comprehensive database. The UNC Charlotte **CIT** is also particularly focused on efforts that impact students in the first two years of engineering education.

Faculty Development

The UNC Charlotte strategy in this area is to provide faculty support to merge with and complement activities in the student transitions area. The team also plans to promote improved teaching methods for ESL (English as a Second Language) students and minority students and link College of Engineering faculty development to campus-wide faculty development.

Outcomes Assessment

In line with its strategy of cooperating with the SPART team, the **CIT** expects to tie strategic planning to outcomes assessment in all phases of the UNCC College of

Engineering's operation. The team also plans to promote and assist creation of departmental outcomes assessment measures through departmental SPART representatives. Another strategy of the team is to obtain input in the development of this process and valuable data from the UNCC Institutional Research Department.

Student Transitions

The UNC Charlotte **CIT** has a comprehensive strategy in this area. The team plans to improve the quality of the first engineering course ("Introduction to Engineering Principles and Practices I") by adding "Quality Topics" and introducing undergraduate mentors into the course to assist with the project teams. The existing mentoring program will be expanded and refined to provide better support to "at risk" student populations. The team also has a commitment in this area to improving the high school pipeline, both through school visits and by delivery of the Introduction to Engineering course to local high school students over Public television. UNC Charlotte has some very specific strategies for addressing the transition to the profession as well—to develop and implement a student "Joint Engineering Council" to achieve the goals of the student professional organizations and to partner with alumni and local professionals willing to mentor and network with students.

Technology-Based Curriculum Delivery

In this area, the UNC-C **CIT** plans to develop a distance learning training program for faculty and incorporate these elements into the UNC-C COE program and determine the infrastructure needs for Internet-based distance education and collaboration. Their strategy for doing this will be to identify two courses and instructors to serve as a test of the technology and the vehicle for training the faculty to use the equipment and deliver instruction in this manner.

Virginia Polytechnic Institute and State University

In 1985, the College of Engineering at Virginia Tech began requiring all freshmen to have personal computers. Virginia Tech's aggressive approach to student and faculty computer usage provides strength in the area of technology-based curriculum delivery and impacts other areas of the Virginia Tech **CIT** plan as well. Integration in a variety of forms is also a strong theme in the Virginia Tech **CIT** strategic plan.

Faculty Development

The main **CIT** objective in this area is to build a learning community dedicated to student success. Various strategies are used to achieve this objective: (1) to improve the learning environment through seminars, workshops, and an active support network that includes regular meetings to share experiences; (2) to strengthen a mentoring program for new faculty, initiated with a learning/teaching workshop, and to expand faculty incentives to implement principles of good practice; (3) to integrate faculty development activities with University programs such as the Center for Excellence in Undergraduate Teaching,

the Faculty Development Initiative to use computer and information technology in education, and the Student Success program.

Outcomes Assessment

The Virginia Tech **CIT** plans to use the input from participating companies to strengthen the development and pilot testing of their assessment instruments. Another important strategy is to partner with the recently created Office of Assessment in its outcomes assessment efforts with alumni and industry.

Student Transitions

This area is a major focus for the Virginia Tech **CIT**. Again, team activities play a major role; they include: vertically integrated multidisciplinary design courses and projects such as Building Design and the Infrastructure project; the integration of mathematics and engineering; and the strongly multidisciplinary Virtual Corporation project. This clearly shows the integrative trend that extends to other efforts as well. Structures labs will be integrated with service to community through the use of service projects, and ethics, professionalism, and engineering design will be added to the introductory engineering laboratory. Moreover, hands-on engineering product and process experiments are integrated in the first Engineering freshman course. Engineering practice opportunities are strengthened and workplace transition workshops are presented.

Technology-Based Curriculum Delivery

In addition to being a driving force for the Coalition's strategies in this area (Virginia Tech is the home of Joe Tront, that team's leader), the **CIT** has other strategies in this area as well. The team plans to institutionalize the use of a web site for engineering advising and to extend the use of multimedia courseware in statics and structural mechanics.

SUCCEED's Coalition Service Team Strategic Plans

In **SUCCEED**'s continuation proposal to the NSF, three Coalition Service Teams (**CSTs**) were identified to support the other functional teams. Rather than sharing the symbiotic relationship typical of the **CFTs/CITs**, the roles of the service teams were to provide Coalition-wide service in their areas of expertise to the other functional teams. The three original **CSTs** were Assessment and Evaluation, Dissemination, and Total Quality Management. In the Coalition's continuing effort to become a quality organization, we have discovered that the role originally defined for the Total Quality Management **CST** can be accomplished most effectively by distributing its responsibilities thus permitting its dissolution. The development of metrics to assess the health of the Coalition, originally assigned to the TQM **CST**, is more appropriately carried out by the Assessment and Evaluation **CST**. More importantly, the most critical function of the TQM **CST**, that of driving the Coalition's development as a quality organization, can only be successful when integrated with the management of the Coalition itself. Thus, the remaining efforts of the TQM **CST** will be carried out in the Coalition administration.

The team will also support team networking/collaboration through special WWW interfaces and videoconferencing.

Objective 3: Facilitate internal focused dissemination through CIT interaction.

The strategy in this area focuses on education and facilitation. The **CIT**s will only disseminate successful efforts from **SUCCEED**'s past if it is aware of them. The Dissemination team, therefore, will play a role in educating the **CIT**s as to what materials are available and serving as a liaison between PIs and new local champions. The initial tool that will be used to accomplish this objective is a collection of project summaries—both in a binder and available on the WWW.

Objective 4: Provide external focused dissemination through interaction with the Council of Schools.

The formation of Council of Schools is a critical strategy of the Dissemination team. The team strongly feels that the problem of disseminating **SUCCEED**'s successful products and processes to the greater community of engineering academia must be broken down into smaller segments both to avoid scattering our efforts and also to ensure that our success can be measured. The strategy for success in this area is to make site visits to each of the schools, share **SUCCEED**'s vision, listen to each partner school's mission, and find points of common interest upon which to begin a collaborative effort.

Objective 5: Participate, and strive for a leadership role, in Inter-Coalition interactions.

The team's strategy in this area is to create an Inter-coalition Liaison Board and, through the common vision of that body, make a greater contribution to systemic reform of engineering education. There are two major strategies toward that end: the development of a common project reporting format to more easily share accomplishments among the coalitions and the sharing of coalition expertise in a series of "best practices" workshops in a wide range of topics.

Objective 6: Disseminate SUCCEED's educational innovations throughout the "Broad-based" educational community.

Although the Council of Schools strategy will have a more pronounced impact at a more limited number of institutions, there is also the need for strategies to disseminate **SUCCEED**'s efforts to the greater body of engineering academia. Three strategies will be used to reach this broader community: displaying **SUCCEED** materials at National and International Conferences and Workshops, holding an annual **SUCCEED** conference (to which outside participants will be invited), and publishing a newsletter, with a broad circulation.

Appendix I

SUCCEED's Strategic and Tactical Plan
(report from electronic form)

Coalition Focus Teams

Faculty Development

CFT Faculty Development: Mission: Establish a comprehensive / sustainable engineering faculty development program on each SUCCEED campus.

CFT FD OB1: Prepare faculty members to implement effective instructional methods & provide continuous support.

CFT FD OB1 TK1 Y6 Y7: Design and present introductory teaching workshops to new and experienced faculty.

CFT FD OB1 TK2 Y6 Y7: Design and present topical workshops.

CFT FD OB1 TK3 Y6 Y7: Establish coalition-wide teaching support networks and assist in the formation of campus networks.

CFT FD OB2: Promote a campus climate conducive to fulfilling the program mission.

CFT FD OB2 TK1 Y6 Y7: Assemble & disseminate options for evaluating & rewarding effective & innovative teaching.

CFT FD OB2 TK2 Y6 Y7: Support the development of teaching leaders who can design, deliver & sustain FD programs for engineering.

CFT FD OB3: Disseminate new instructional methods, materials, programs, and implementation strategies.

CFT FD OB3 TK1 Y7: Publish and promote an electronic newsletter on teaching.

CFT FD OB3 TK2 Y6 Y7: Assemble and maintain links to electronic instructional resources for engineering educators.

CFT FD OB3 TK3 Y7: Organize 1999 multi-coalition conference on faculty development best practices.

CFT FD OB3 TK5 Y6 Y7: Develop and disseminate a model for engineering faculty development.

CFT FD OB3 TK4 Y7: Organize the 1999 SUCCEED conference to be focused on teaching enhancement.

CFT FD OB4: Assess and evaluate the coalition-wide FD program

CFT FD OB4 TK1 Y6 Y7: Assess the level of participation in faculty development activities.

CFT FD OB4 TK2 Y6 Y8 Y10: Assess and evaluate faculty use of innovative teaching practices and perceptions of the campus level of support for teaching.

CFT FD OB4 TK3 Y6 Y7: Assess the level of FD activity on each campus.

CFT FD OB4 TK4 Y6 Y7: Assess and evaluate the quality of coalition-wide workshops.

Outcomes Assessment

CFT Outcomes Assessment Mission: Lead eng'g schools through the process of continuous curriculum improvement using OA methods.

CFT OA OB1: Develop best practices for OA of eng'g graduates & methods for using OA for curriculum change.

CFT OA OB1 TK1 Y6: Pilot test best practice methods and instruments to collect baseline data for measurement of key attributes in chemical, industrial, and mechanical departments. Share plan with ABET and ASEE.

CFT OA OB1 TK2 Y6: Place notebook on WEB and ask for input on methods and instruments from users.

CFT OA OB1 TK3 Y6: Conduct workshop for SUCCEED faculty to train the trainers in using Outcomes Assessment notebook, materials, and methods.

CFT OA OB1 TK4 Y6: Collect information from other coalitions and institutions on progress and experience in OA results.

CFT OA OB1 TK5 Y7: Evaluate results of pilot test in year 6 and refine instruments and methods.

CFT OA OB1 TK6 Y7: Conduct a workshop (open to all) connected with Rose-Hulman Conference to train faculty in use of CIR process and OA instruments and methods.

CFT OA OB2: Implement Curriculum Innovation and Renewal using Outcomes Assessment results

CFT OA OB2 TK1 Y6: Improve manual through reading and editing by assessment experts.

CFT OA OB2 TK2 Y6: Ask for written evaluation of manual by departments who have read it and used it.

CFT OA OB2 TK3 Y6: Transfer CIR manual to web site.

CFT OA OB2 TK4 Y7: Offer workshop to SUCCEED faculty on using OA results to improve curriculum.

Student Transitions

CFT Student Transitions Mission: Facilitate/ disseminate/ implement strategies to assist students through the transitional phases of their engineering education experience.

CFT ST OB1: Provide students access to real-world design experiences through multidisciplinary design courses.

ST OB1 TK1 Y6: Benchmark existing multidisciplinary design efforts on SUCCEED campuses

ST OB1 TK2 Y6: Hold a Multidisciplinary Design Workshop to bring current practitioners into contact with potential local champions on other campuses (scheduled with SUCCEED Annual Meeting)

ST OB1 TK3 Y7: Disseminate results of the Multidisciplinary Design Workshop.

ST OB1 TK4 Y7: Identify champions on all campuses who will pilot multidisciplinary efforts.

ST OB1 TK5 Y7: Determine costs and key elements suitable for scale-up of various multidisciplinary design programs.

CFT ST OB2: Establish an early engineering identity and expand first-year transitioning

ST OB2 TK1 Y6: Benchmark existing bridge programs

ST OB2 TK2 Y6: Initiate planning for a Year 7 Workshop

ST OB2 TK3 Y6: Benchmark peer mentoring programs for women and minority engineering students

ST OB2 TK4 Y6: Initiate planning for a Year 7 Workshop

ST OB2 TK5 Y7: Hold workshop on existing bridge transition programs on SUCCEED and other campuses

ST OB2 TK6 Y7: Disseminate results of the Bridge Programs Workshop

ST OB2 TK7 Y7: Hold workshop on existing peer mentoring programs on SUCCEED and other campuses

ST OB2 TK8 Y7: Disseminate results of the Peer Mentoring Workshop.

CFT ST OB3: Provide students opportunities to participate more frequently in internships, co-operative work, and international experiences

ST OB3 TK1 Y6: Benchmark existing practices in internships, co-ops, and international experiences.

ST OB3 TK2 Y6: Plan for a coalition wide workshop on Practice Opportunities in Year 7.

ST OB3 TK3 Y7: Hold workshop on existing practice opportunities in internships, co-ops, and international experiences.

ST OB3 TK4 Y7: Disseminate results of the Practice Opportunities Workshop.

CFT ST OB4: Assess and evaluate Student Transitions efforts.

ST OB4 TK1 Y6: Work with A&E team to develop a questionnaire suitable for establishing the baseline assessment of transitions courses

ST OB4 TK2 Y6: Attend A&E meetings and workshops.

ST OB4 TK3 Y7: Administer questionnaire to establish baseline assessment of transitions courses.

ST OB4 TK4 Y7: Disseminate the assessment results.

CFT ST OB5: Provide a social/technical vehicle for networking women within academia and between academia and industry

ST OB5 TK1 Y6: Plan and hold an annual Women's Engineering Board (W.E.B.) conference among the coalition campuses.

ST OB5 TK2 Y7: Continue to plan and hold an annual Women's Engineering Board (W.E.B.) conference among the coalition campuses.

CFT ST Admin

Technology-Based Curriculum Delivery

CFT Technology-Based Curriculum Delivery Mission: Extend the reach & effectiveness of eng'g education through the use of advanced technology.

CFT TBCD OB1: SUCCEED will substantially enhance teacher-student and student-student communication using net-based collaborative environments for academic interaction

Establish a set of workshops to train faculty in the development of www-based materials to promote the use of net-based learning environments

CFT TBCD OB1A TK 1 Y6 Y7. Develop a standard interface format for WWW materials [2]

CFT TBCD OB1A TK 2 Y6 Y7. Create a standard programming format for WWW materials [4]

CFT TBCD OB1A TK 3 Y6 Y7. Establish a documentation standard [5]

CFT TBCD OB1A TK 4 Y6 Y7. Identify topics of common interest [6]

CFT TBCD OB1A TK 5 Y6 Y7. Create a workshop for media-based material development [9]

CFT TBCD OB1A TK 6 Y6 Y7. Create a workshop for WWW-based development [10]

CFT TBCD OB1A TK 7 Y6 Y7. Deliver materials development workshop [12]

CFT TBCD OB1A TK 8 Y6 Y7. Deliver WWW development workshop [13]

CFT TBCD OB1A TK 9 Y6 Y7. Support ongoing training at home institutions [15]

CFT TBCD OB1A TK10 Y6 Y7. Assess the current technology needs of the faculty [1]

CFT TBCD OB1 TK1 Y7: Provide workshops on the implementation of networked collaborative tools for distance learning [20,21]

CFT TBCD OB1 TK2 Y?: Establish a network-based repository for computer and www-based teaching/learning materials

CFT TBCD OB2: Empower faculty to develop electronic media-based instructional content

Establish a set of workshops to train faculty in the development of computer-based materials to promote the use of technology-based learning environments

CFT TBCD OB2A TK 1 Y6 Y7. Develop a standard interface format for computer-based materials [3]

CFT TBCD OB2A TK 2 Y6 Y7. Create a standard programming format for computer-based materials [4]

CFT TBCD OB2A TK 3 Y6 Y7. Establish a documentation standard [5]

CFT TBCD OB2A TK 4 Y6 Y7. Identify topics of common interest [6]

CFT TBCD OB2A TK 5 Y6 Y7. Create a workshop for media-based material development [9]

CFT TBCD OB2A TK 6 Y6 Y7. Create a workshop on authoring tools [11]

CFT TBCD OB2A TK 9 Y6 Y7. Support ongoing training at home institutions [15]

CFT TBCD OB2A TK 7 Y6 Y7. Deliver materials development workshop [12]

CFT TBCD OB2A TK 8 Y6 Y7. Deliver authoring tools workshop [14]

CFT TBCD OB2A TK10 Y6 Y7. Assess the current technology needs of the faculty [1]

CFT TBCD OB2 TK1 Y8: Provide access to high-end multimedia production to all faculty across the coalition

CFT TBCD OB2 TK2 Y7: Design & present a set of workshops for courseware developers on assessment techniques for technology-based learning environments [17]

CFT TBCD OB3: Use net technologies to improve management operations throughout the Coalition

CFT TBCD OB3 TK1 Y6 Y7: Desktop videoconferencing and collaborative tools for coalition leadership [19]

CFT TBCD OB3 TK2 Y8: Provide workshop series on collaborative networking for administrators

Campus Implementation Teams

Clemson

Clemson CIT Mission: Implement SUCCEED Curriculum Model in the unique environment of Clemson University.

CL CIT FD: Faculty Development: Provide a strong faculty development program for Engineering and Science faculty.

CL CIT FD OB1: Provide programs to enhance faculty skills and knowledge in teaching methods and educational innovations

CL CIT FD OB1 TK1 Y6 Y7: Provide frequent seminars and workshops.

CL CIT FD OB1 TK2 Y6 Y7: Send faculty to national/regional teaching improvement programs.

CL CIT FD OB1 TK3 Y6 Y7: Coordinate with faculty development activities at university level to provide synergy.

CL CIT FD OB1 TK4 Y6 Y7: Develop new faculty orientation workshop

CL CIT FD OB2: Support faculty use of enhanced teaching methods

CL CIT FD OB2 TK1 Y6 Y7: Establish faculty mentor group.

CL CIT FD OB2 TK2 Y6 Y7: Support faculty implementation of SUCCEED products.

CL CIT OA: Outcomes Assessment: Implement program of continuous curriculum improvement consistent with ABET 2000 requirements,

CL CIT OA OB1: Develop & implement assessment processes for each BS program

CL CIT OA OB1 TK1 Y6 Y7: Implement college level processes for evaluation and assessment

CL CIT OA OB1 TK2 Y6 Y7: Put assessment program in place in each BS program

CL CIT OA OB1 TK3 Y7 Y8 Y9 Benchmark outcome indicators and assessment processes

CL CIT OA OB2 Develop and apply integrated continuous curriculum renewal process

CL CIT OA OB2 TK1 Y7: Integrate outcomes assessment plan into SUCCEED curriculum renewal process and pilot in two CU programs

CL CIT OA OB2 TK2 Y8 Y9 Y10: Apply modified curriculum renewal process on on-going basis

CL CIT ST: Student Transitions: Enhance success in transitions into the university and into the workplace.

CL CIT ST OB1: Provide a strong, supportive first year program and environment.

CL CIT ST OB1 TK1 Y6 Y7: Develop and pilot a mentoring program for engineering freshmen.

CL CIT ST OB1 TK2 Y6 Y7: Review and revise ENGR 101/120, incorporating appropriate elements from other SUCCEED schools.

CL CIT ST OB1 TK3 Y6 Y7: Review and revise ENGR 110, incorporating appropriate elements from other SUCCEED schools.

CL CIT ST OB1 TK4 Y6 Y7: Integrated freshman curriculum.

CL CIT ST OB2: Provide students with skills needed in the workplace.

CL CIT ST OB2 TK1 Y6 Y7: Extend multidisciplinary/multi-campus design program to additional participants.

CL CIT ST OB2 TK2 Y6: Evaluate IPPD and QIP programs for applicability to Clemson.

CL CIT ST OB2 TK3 Y6 Y7: Provide strong international component in the curriculum.

CL CIT TBCD: Technology-Based Curriculum Delivery: Extend the reach and effectiveness of engineering education through the use of advanced computing and communications technologies.

CL CIT TBCD OB1: Enhance educational effectiveness through use of advanced computing and communications technologies.

CL CIT TBCD OB1 TK1 Y6 Y7: Develop hardware, software, and human resources to support faculty use of educational technology.

CL CIT TBCD OB1 TK2 Y6 Y7: Conduct workshops on educational technology

CL CIT TBCD OB1 TK3 Y6 Y7: Organize educational technology user's group(s).

CL CIT TBCD OB1 TK4 Y6 Y7: Incorporate asynchronous learning network methods into courses.

CL CIT TBCD OB1 TK5 Y6 Y7 Universal computing environment pilot study

CL CIT TBCD OB2: Employ advanced computing and communications technologies to enhance collaboration

CL CIT TBCD OB2 TK1 Y6 Y7: Facilitate group projects involving spatially separated teams.

CL CIT TBCD OB2 TK2 Y6 Y7: Offer courses involving shared faculty expertise across SUCCEED institutions.

FAMU-FSU

FAMU-FSU CIT Mission: Implement SUCCEED's Curriculum Model at FAMU-FSU

FM CIT FD: Faculty Development: Train and educate faculty and reward innovative teaching.

FM CIT FD OB1: Train and educate faculty

FM CIT FD OB1 TK1 YR6 YR7: Workshops on what works in teaching and what doesn't

FM CIT FD OB1 TK2 YR6 YR7: Workshops for faculty still working towards tenure

FM CIT FD OB1 TK3 YR6 YR7: Workshops for tenured faculty

FM CIT FD OB1 TK4 YR6: Production of 30-minute clips for FD WWW site

FM CIT FD OB2: Reward innovative teaching

FM CIT FD OB2 TK1 YR6 YR7: Implementation of teaching innovation awards

FM CIT OA: Outcomes Assessment: Develop and demonstrate OA measures, educate dept. chairs and curriculum committees, and aid curriculum renewal

FM CIT OA OB1: Develop and demonstrate OA measures

FM CIT OA OB1 TK1 YR6: Development of graduation rate metrics and assessment

FM CIT OA OB1 TK2 YR6: Development of graduate quality metrics and assessment

FM CIT OA OB1 TK3 YR6: Development of graduation cost metrics and assessment

FM CIT OA OB2: Educate department chairs and curriculum committees
FM CIT OA OB2 TK1 YR6: Production of 30-minute clips for OA WWW site
FM CIT OA OB3: Aid curriculum renewal
FM CIT OA OB3 TK1 YR6 YR7: Curriculum renewal in departments (ME in YR6; all in YR7)
FM CIT OA OB3 TK2 YR7 Educate Dept Chairs and Curriculum Committees about curriculum renewal

FM CIT ST: Student Transitioning: Implement effective transitioning projects and educate dept. chairs and curriculum committees

FM CIT ST OB1: Implement effective transitioning projects
FM CIT ST OB1 TK1 YR6 YR7: Implementation of first year program
FM CIT ST OB1 TK2 YR6: Production of diagnostic exams for SUCCEED's Stages 1, 2 & 3
FM CIT ST OB1 TK3 YR6 YR7: Implementation of SUCCEED Stage 3 projects
FM CIT ST OB2: Educate department chairs and curriculum committees
FM CIT ST OB2 TK1 YR6: Production of 30-minute clips for ST WWW site

FM CIT TBCD: Technology-Based Curriculum Delivery: Develop effective faculty tools (task1), implement mastery enhancement tools (tasks 2&3), and educate and train faculty (task4)

FM CIT TBCD OB1: Develop effective faculty tools
FM CIT TBCD OB1 TK1 YR6: Implementation of College-wide student advising tool
FM CIT TBCD OB2: Implement mastery enhancement tools
FM CIT TBCD OB2 TK2 YR6: Implementation of standardized exit exams
FM CIT TBCD OB2 TK1 YR6 YR7 : Development of multimedia instructional tools for mastery enhancement
FM CIT TBCD OB3: Educate and train faculty
FM CIT TBCD OB3 TK1 YR6 YR7: Produce 30-minute clips for FAMU-FSU SUCCEED WWW site
FM CIT TBCD OB3 TK2 YR7 Train faculty through hands-on workshops in fall and spring semesters.

FM CIT AE: Assessment & Evaluation

FM CIT AE OB1: Participate in Coalition-wide A&E Projects
FM CIT AE OB1 TK1 YR6 YR7: Coordination of A&E tasks
FM CIT AE OB2: Educate department chairs and curriculum committees
FM CIT AE OB2 TK1 YR6: Production of 30-minute clips for A&E WWW site

Georgia Tech

GA Tech CIT Mission: Implement SUCCEED's Curriculum Model at Georgia Tech

GT CIT FD: To foster a campus climate where faculty development is a common activity and where the establishment of the faculty development activities is institutionalized.

GT CIT FD OB1: Assist Faculty in improving teaching methods
GT CIT FD OB1 TK1 Y7: Host a workshop on learning styles of students and faculty.
GT CIT FD OB1 TK2 Y7: Host a series of seminars on using technology in the classroom.
GT CIT FD OB1 TK3 Y7: Offer a workshop describing how to be an effective faculty member focusing on the needs of new faculty.
GT CIT FD OB1 TK4 Y7: Provide a seminar on the role of faculty advising during the semester conversion.
GT CIT FD OB2: Establish core faculty steering team for providing guidance to faculty development tasks
GT CIT FD OB2 Y6 TK1: Select and empower this group
GT CIT FD OB2 Y6 TK2: Create communication channels between group and faculty at large
GT CIT FD OB2 Y6 TK3: Review workshops and tasks
GT CIT FD OB2 Y7 TK2: Establish a reading seminar on faculty development topics.
GT CIT FD OB2 Y7 TK1: Establish an electronic and paper comment forum for topics and comments from faculty.
GT CIT FD OB2 Y7 TK3: Review the workshops after each is held to evaluate how to do better.
GT CIT FD OB2 Y7 TK4: Plan/Develop workshops for year 8.

GT CIT OA: Outcomes Assessment

GT CIT OA OB1: Establish appropriate measurable outcomes
GT CIT OA OB1 TK1 Y6: Establish Assessment Seminar
GT CIT OA OB2: Assessment System Development
GT CIT OA OB2 TK1 Y6: Measures and designs
GT CIT OA OB2 TK2 Y6: Tracking of overall Outcomes Assessment CIT activity
GT CIT OA OB3: To gather, evaluate, coordinate, and act upon data appropriate to outcomes
GT CIT OA OB3 TK1 Y7: Coordinate and guide engineering unit assessment efforts established or projected in ABET preparation documents.
GT CIT OA OB4: Develop an up-datable psychometric profile of academic and non-academic variables to enhance prediction of success in engineering curricula

GT CIT ST: Student Transitions

GT CIT ST OB1: Begin process of implementing, evaluating, and refining broad-based transitional efforts for freshmen

GT CIT ST OB1 TK1: Develop pilot for diverse, broad-based summer transition program

GT CIT ST OB1 TK2: Market to small segment of majority population

GT CIT ST OB2: Incorporate curriculum technology modules into existing academic support processes (i.e., tutorials, study groups, workshops) for the intra-curriculum transitions

GT CIT ST OB2 TK1: Conduct survey of undergraduate coordinators on major specific software in use

GT CIT ST OB2 TK2: Develop workshops for math software usage (Maple)

GT CIT ST OB2 TK3: Test interactive Math instructional software

GT CIT ST OB3: Begin to institutionalize Dual Degree/Transfer transition efforts

GT CIT ST OB3 TK1: Develop plan with overall Georgia Tech Dual Degree process to integrate OMED HBCU efforts

GT CIT ST OB3 TK2: Develop pilot transition effort for all dual degree and transfer students

GT CIT ST OB4: Integrate core faculty into Graduate transitional effort for underrepresented students

GT CIT ST OB4 TK1: Convene second meeting of School Directors to discuss transitional needs of students and potential assistance

GT CIT ST OB4 TK2: Refine process to incorporate faculty

GT CIT ST OB5: Develop a pilot freshman design course

GT CIT ST OB5 TK1: Import successful design course components from SUCCEED institutions for summer transition

GT CIT ST OB5 TK2: Create a design-based elective course for freshman year

GT CIT ST OB6: Redesign Summer freshman transition program into year-long program that begins with up-front preparation in the Spring and continues through Winter quarter of Freshman year

GT CIT ST OB6 TK1: Hire Parent/Family program coordinator

GT CIT ST OB6 TK2: Develop integrated parent process to improve pre-matriculation preparation of freshmen

GT CIT TBCD: Technology-Based Curriculum Delivery

GT CIT TBCD OB1: Improve Mechanics course using technology enhancement.

GT CIT TBCD OB1 TK1 Y6: Survey of use of existing technology by sophomore students to assist with learning engineering mechanics

GT CIT TBCD OB1 TK2 Y6: Create modules for semester-based courses in statics that utilize existing technologies which have been reviewed and which the faculty can select

GT CIT TBCD OB2: Empower faculty to develop electronic media-based instructional content.

GT CIT TBCD OB2 TK1 Y7: Provide training for faculty and their graduate teaching assistants in methods of multimedia production.

GT CIT TBCD OB2 TK2 Y7: Offer a workshop on the use of course management software tools by practitioners

GT CIT TBCD OB3: Enhance teacher-student and student-student communication using network-based collaborative environments

GT CIT TBCD OB4 TK1 Y7: Redevelop courses by adding multimedia demonstrations accessible via the WWW.

GT CIT TBCD OB4 TK2 Y7: Experiment using video-conferencing, streaming video/audio and asynchronous learning networks to establish a means of holding "virtual office hours".

GT CIT TBCD OB4 TK3 Y7: Plan for one course to be exported from GT and taught via distance education methods such as streaming media

NC A&T

NC A&T CIT Mission: Implement SUCCEED's Curriculum Model at NC A&T

NT CIT FD: Faculty Development

NT CIT FD OB1: Study development models at other universities.

NT CIT FD OB1 TK1: Collect faculty development data from all SUCCEED schools.

NT CIT FD OB2: Define Best model for Faculty Development at A&T.

NT CIT FD OB2 TK1: Align our goals for FD with administration's goals.

NT CIT FD OB2 TK2: Identify key people to ensure success of the program.

NT CIT FD OB3: Establish programs to encourage and enhance effective teaching.

NT CIT FD OB3 TK1: Establish a brown bag program to discuss teaching.

NT CIT FD OB3 TK2: Establish New Faculty Orientation Program.

NT CIT FD OB3 TK3: Increase Faculty Participation in effective teaching workshops.

NT CIT FD OB4: Establish programs to enhance faculty's grantsmanship.

NT CIT FD OB4 TK1: Set up seminars/workshops to enhance faculty grantsmanship.

NT CIT OA: Outcome Assessment: Facilitate Curriculum Improvements Through Outcomes Assessment in the College of Engineering at NC A&T

NT CIT OA OB1: Establish and Test Outcomes Assessment Measures and Methods.

NT CIT OA OB1 TK1: Establish assessment measures.

NT CIT OA OB1 TK2: Develop data collection methods

NT CIT OA OB1 TK4: Conduct Pilot Study

NT CIT OA OB1 TK3: Develop Mechanism for Curriculum Improvement based on Outcomes Assessment.

NT CIT OA OB2: Implement Curriculum Improvements Using Outcomes Assessment

NT CIT OA OB2 TK1: Conduct training sessions for engineering departments

NT CIT OA OB2 TK2: Facilitate Assessment and Curriculum Reform in all programs in the college

NT CIT ST: Student Transitions

NT CIT ST OB1: Establish a formal new freshman program.

NT CIT ST OB1 TK1: Study programs at each of the coalitions schools

NT CIT ST OB1 TK2: Implement programs championed by our faculty and coalition members.

NT CIT ST OB2: Establish a formal new transfer program.

NT CIT ST OB2 TK1: Set up a transfer student mentor program.

NT CIT ST OB2 TK2: Study the successful programs implemented on two of SUCCEED campuses.

NT CIT ST OB2 TK3: Search for cost effective ways of delivering a successful program.

NT CIT ST OB3: Establish a formal program to help students transition into the profession.

NT CIT ST OB3 TK1: Establish "Quality Improvement Partnerships" programs (see OB4 below).

NT CIT ST OB3 TK2: Investigate SUCCEED multidisciplinary design experience programs.

NT CIT ST OB3 TK3: Increase students participation in professional development activities.

NT CIT ST OB3 TK4: Increase participation in REU programs.

NT CIT ST OB4: Establish a QIP Program between NC Biotechnology Companies and NCA&TSU.

NT CIT ST OB4 TK1: Set up framework for QIP program.

NC CIT ST OB4 TK2: Recruit faculty, students and partners.

NT CIT ST OB4 TK3: Implement program.

NT CIT TBCD: Technology-Based Curriculum Delivery

NT CIT TBCD OB1: Study technology being used at other Universities.

NT CIT TBCD OB1 TK1: Collect information from all SUCCEED universities.

NT CIT TBCD OB1 TK2: Identify technologies with high potential.

NT CIT TBCD OB1 TK3: Visit SUCCEED universities with high potential technologies.

NT CIT TBCD OB2: Evaluate specific technology for use at A&T.

NT CIT TBCD OB2 TK1: Identify the impact, implementation difficulties and cost of potential technologies.

NT CIT TBCD OB2 TK2: Match the potential technologies with the expertise at A&T.

NT CIT TBCD OB2 TK3: Expose the selected technologies to the relevant faculty members for evaluation.

NT CIT TBCD OB3: Encourage faculty to use new technology in their teaching.

NT CIT TBCD OB3 TK1: Provide funds for training and attending workshops.

NT CIT TBCD OB3 TK2: Provide necessary equipment to enhance educational delivery.

NT CIT TBCD OB3 TK3: Align our goals with the University goals and request matching.

NCSU

NCSU CIT Mission: Implement a curriculum model which will produce graduates with the characteristics embodied in the mission of SUCCEED

NS CIT FD: Faculty Development: Enhance undergraduate teaching/learning in engineering and related areas

NS CIT FD OB1: Establish campus-wide series of effective teaching workshops to facilitate widespread adoption of proven materials and methods.

NS CIT FD OB1 TK1 Y6 Y7: Establish a campus-wide series of effective teaching workshops to facilitate widespread adoption of proven instructional materials and methods in courses taught to engineering students.

NS CIT FD OB1 TK2 Y6 Y7: Expand collaboration with NC State's new Center for Learning and Teaching

NS CIT FD OB1 TK3 Y7: Establish a refresher workshop and brown bag lunch series to encourage continued teaching improvement

NS CIT FD OB1 TK4 Y6 Y7: Provide supplementary training to campus teaching leaders to equip them to lead future workshops/seminars.

NS CIT FD OB2: Offer specialized workshops to meet the needs of all faculty.

NS CIT FD OB2 TK2 Y7: Offer specialized workshop

NC CIT FD OB2 TK1 Y6: Collaborate with Faculty Development CFT and Center for Learning and Teaching to develop specialized workshop on diversity.

NS CIT FD OB3: Promote a campus environment that encourages teaching innovation and rewards excellence.

NS CIT FD OB3 TK1 Y7: Compile a list of incentives and rewards.

NS CIT OA: Outcomes Assessment: Implement program of continuous improvement based on outcomes assessment consistent with ABET 2000

NS CIT OA OB1: Apply the key components of the "Outcomes Assessment Planning Guide and the "Manual for Curriculum Innovation and Renewal" to the curriculum renewal process.

NS CIT OA OB1 TK3 Y7: Begin and complete the design of an EE and CPE honor's program.

NS CIT OA OB1 TK2 Y6 Y7: Design and obtain faculty approval for new EE and CPE curricula.

NS CIT OA OB1 TK1 Y6: Initiate curriculum renewal process in the ECE department.

NS CIT OA OB1 TK4 Y7: Begin and complete the design of an EE and CPE five-year MS program

NS CIT OA OB2: Encourage the use of the curriculum renewal process in all departments in the College of Engineering.

NS CIT OA OB2 TK1 Y6: Collect and share Outcomes Assessment tools

NS CIT OA OB2 TK2 Y6 Y7: Based on the experience gained from the currciculm design in ECE, help other departments assess and renew their curricula

NS CIT OA OB2 TK3 Y7: Create and give a presentation on assessment plan development for faculty and departmental leadership.

NS CIT OA OB2 TK4 Y7: Develop a presentation for faculty and departmental leadership on developing linkage between the information gained through assessment with curriculum innovation and change.

NS CIT OA OB3: Work with the Outcomes Assessment CFT to achieve overall SUCCEED goals.

NS CIT ST: Student Transitions: Provide a strong, supportive first year environment and develop success skills for the workplace

NS CIT ST OB1: Provide a strong first-year environment that facilitates a successful transition for freshman and transfer students

NS CIT ST OB1 TK1 Y6 Y7: Expand/Enhance summer bridge program (STP) Y6 Y7

NS CIT ST OB1 TK2 Y6 Y7: Scale-up mentoring program to broader freshman population.

NS CIT ST OB1 TK3 Y7: Develop improved transition program for transfer students.

NS CIT ST OB2: Improve retention by helping students develop survival skills, an early engineering identity and sense of community.

NS CIT ST OB2 TK1 Y6 Y7: Continue to scale-up and implement new first-year Introduction to Engineering course which mainstreams the best components of freshman pilot courses.

NS CIT ST OB2 TK2 Y7: Enhance/expand leadership development opportunities for students

NS CIT ST OB2 TK3 Y7: Evaluate/incorporate components of Virginia Tech's Writing Accross the Curriculum programs.

NS CIT ST OB3: Provide mroe upper division multidisciplinary design opportunities to enhance successful transitions to the workplace or graduate school.

NS CIT ST OB3 TK1 Y6: Establish faculty team interested in promoting multidisciplinary design opportunities.

NS CIT ST OB3 TK2 Y7: Develop a model for encouraging multidisciplinary design.

NS CIT TBCD: Extend the reach and effectiveness of education using computing and communication technologies.

NS CIT TBCD OB1: Enhance student-teacher and student-student communication/collaboration using network-assisted environments.

NS CIT TBCD OB1 TK1 Y6 Y7: Work with the TBCD CFT to develop a coalition-wide web-based conferencing system that will facility forum discussions in courses.

NS CIT TBCD OB2: Facilitate student learning by effective and expanded use of CD-ROM and WWW technology.

NS CIT TBCD OB2 TK1: Enhance faculty's ability to incorporate use of WWW-based course materials in curricula by coordinating the acquisition and deployment of an integrated set of supportable tools and guidelines.

NS CIT TBCD OB2 TK2: Prepare suitable materials to tie the modules into the respective course plans

NS CIT TBCD OB3: Expand distance-based course offerings and course sharing to selected four-year campuses and community colleges.

NS CIT TBCD OB3 TK1 Y6 Y7: Scale-up internet-based engineering course offerings.

NS CIT TBCD OB3 TK2 Y6 Y7: Continue to put into place the technology/infrastructure to encourage course sharing.

UF

UFL CIT Mission: Implement SUCCEED Curriculum Model at the University of Florida in a manner consistent with the priorities of the Colege strategic plan.

UF CIT FD: Faculty Development: Establish an effective faculty development program for the College of Engineering.

UF CIT FD OB1: Institute a Faculty Development Office that will facilitate the dissemination and introduction of SUCCEED products and processes college-wide.

FD OB1 TK1 Y6 Y7: Develop a Faculty Orientation Program

UF CIT FD OB2: Encourage Excellence in Teaching in College of Engineering

UF CIT FD OB2 TK1 Y7: Establish a Teaching Fellow Program

UF CIT OA: Outcomes Assessment: Facilitate a process of continuous curriculum development and improvement for all 12 departments in the College of Engineering.

UF CIT OA OB1: Promote and Facilitate the Curriculum Renewal Process in the Collge of Engineering

UF CIT OA OB1 TK1 Y6 Y7: Support Curriculum Renewal and Outcomes Assessment Activities in 4 Departments

UF CIT OA OB1 TK2 Y8 Y9 Y10: Obtain College Support for Ongoing OA and CIR Efforts in All Departments

UF CIT OA OB2: Implement OA Monitoring Processes at the College and Degree Program Level

UF CIT OA OB2 TK1 Y7 Y8: Evaluate and Strengthen Assessment Procedures for BS Programs Each Department

UF CIT OA OB2 TK2 Y7 Y8: Study and Redesign College-level Outcomes Assessment Procedures

UF CIT ST: Student Transitions: Establish mechanisms for effective introduction to engineering, as well as continuous transition success within the engineering program and meaningful industrial experience for success in the workplace.

UF CIT ST OB1: Expand, promote, refine and institutionalize the Integrated Product and Process Design (IPPD) program in the College of Engineering

UF CIT ST OB1 TK1 Y6 Y7: Integrate IPPD into the regular curriculum, improve the efficiency of the program with a target of 25 projects and 150 students.

UF CIT ST OB1 TK2 Y6: Establish an official catalog entry for the IPPD Course

UF CIT ST OB2: Improve the retention rate of Community College transfer students via a workshop and mentoring program which is reasonable in cost and thus institutionalizable.

UF CIT ST OB2 TK1 Y6 Y7: Expand and institutionalize the Community College program in the college of engineering.

UF CIT ST OB3: Provide entering minority freshmen with college survival skills and increase their success and retention rates in engineering using the STEPUP (Successful Transition through Enhanced Preparation for Undergraduate Programs) model.

UF CIT ST OB3 TK1 Y6 Y7: To Optimize and institutionalize the UF STEPUP program for the retention and success of minority students

UF CIT ST OB4: Pilot study for establishing an Internationalization Program in the College of Engineering at the University of Florida - using the Clemson SUCCEED model

UF CIT ST OB4 TK1 Y7: Develop a Pilot Internationalization Program at UF following the Clemson Model

UF CIT ST OB5: Develop a Professional Communication course and/or curricular content for undergraduates in the College of Engineering.

ST OB5 TK1 Y6 Y7: Create a Professional Communications component module across the curriculum

UF CIT ST OB6: Institutionalize extend the SUCCEED Freshman's Laboratory course for introduction to engineering

UF CIT ST OB6 TK1 Y6 Y7: Institutionalize the Freshman's Laboratory course and add components accessible via the Internet

UF CIT TBCD: Technology-Based Curriculum Delivery: Develop a college-wide resource for facilitating the use of information technologies in enhancing the learning process.

UF CIT TBCD OB1: Import selected CD-ROM courseware developed by the SUCCEED coalition for use in appropriate engineering courses at the University of Florida

UF CIT TBCD OB1 TK1 Y6: Import VIMS CD-ROM for use in UF Materials Science Course

UF CIT TBCD OB2: Establish a college-wide resource for developing, maintaining and training faculty in the use of Asynchronous Learning Networks (ALNs) in all engineering courses.

UF CIT TBCD OB2 TK1 Y6 Y7: Setup central integrated WWW server with streaming audio and video capabilities, automated list servers and IRC chat channel facilities

UF CIT TBCD OB2 TK2 Y7: Establish WWW-based resources for Advising and Mentoring for STEPUP and CC Programs

UF CIT TBCD OB2 TK3 Y7: Support and enhance the use of computer and communication technology via workshops and TBCD interest groups

UF CIT TBCD OB3: Provide a real-world manufacturing laboratory experience using the Emulated Flexible Manufacturing Laboratory (EFML) to produce a virtual factory environment.

UF CIT TBCD OB3 TK1 Y6 Y7: Expand and refine the capabilities of the Emulated Flexible Manufacturing Laboratory (EFML)

UNC Charlotte

UNC-C CIT Mission: Implement SUCCEED's Curriculum Model at UNC-Charlotte and facilitate and provide resources for the Strategic Planning and Resources Team

UC CIT FD: Faculty Development: Establish a sustainable engineering faculty development program to enhance undergraduate teaching

UC CIT FD OB1: Prepare faculty to implement effective instructional methods and provide continuous faculty development support

UC CIT FD OB1 TK1 Y6 Y7: Recruit and support teaching leaders for introductory teaching workshops

UC CIT FD OB1 TK2 Y6 Y7: Initiate a program for continuous faculty development support to the UNCC faculty

UC CIT FD OB2: Promote a campus climate conducive to faculty development

UC CIT FD OB2 TK1 Y6 Y7: Provide faculty support to merge with and complement Student Transitions activities

UC CIT FD OB2 TK2 Y6: Promote improved teaching methods for ESL (English as a Second Language) students and minority students

UC CIT FD OB3: Disseminate new instructional methods, materials, programs and implementation strategies

UC CIT FD OB3 TK1 Y6 Y7: Link COE faculty development to campus-wide faculty development

UC CIT OA: Outcomes Assessment: Tie strategic planning to outcomes assessment in all phases of the UNCC College of Engineering's operation

UC CIT OA OB1: Develop key performance indicator measures for the COE and its departments, on Goals and Objectives of their Strategic Plans

UC CIT OA OB1 TK1 Y6: Refine measures for Student, Faculty and Community development, based on stakeholder feedback

UC CIT OA OB1 TK2 Y7: Devise scorecard of key mesures to present the status of COE outcomes

UC CIT OA OB1 TK3 Y7: Promote and assist creation of Departmental OA measures through departmental SPART representatives

UC CIT OA OB2: Establish effective mechanisms for data collection, storage, retrieval, summary and dissemination

UC CIT OA OB2 TK1 Y6 Y7: Hire a new SPART assistant to develop and operate the database

UC CIT OA OB2 TK2 Y6 Y7: Select and acquire hardware and software for the database

UC CIT OA OB2 TK3 Y7: Input data from the spring 1997 courses into the database

UC CIT OA OB2 TK4 Y7: Establish data-link and input from UNC-C Institutional Research Department

UC CIT OA OB2 TK5 Y7: Report to the COE and Departments on trial-run results

UC CIT OA OB2 TK6 Y7: Create a WWW-based data collection and results dissemination mechanism

UC CIT OA OB3: Assist the COE in assessing and evaluating the initiatives in their strategic plans, toward Curriculum 2000

UC CIT OA OB3 TK1 Y6 Y7: Assist Department by providing OA instruments for ABET Criteria 2000, along with suggestions for use

UC CIT OA OB3 TK2 Y7: Assist Departments in evaluation capstone and multi-disciplinary, team based courses

UC CIT OA OB3 TK3 Y6 Y7: Assist in Outcomes Assessment of SUCCEED supported initiatives

UC CIT ST: Student Transitions: To create an environment to facilitate successful transitions, improve retention, foster self-confidence and professional development and ensure timely evlauation and valid assessment of change

UC CIT ST OB 1: Investigate SUCCEED programs and determine their applicability to the UNC-C COE Strategic Plan

UC CIT ST OB1 TK1 Y6 Y7: Select elements of SUCCEED student transition programs to implement at UNC-Charlotte

UC CIT ST OB 2: Improve the quality of the first engineering course, "Introduction to Engineering Principles and Practices I"

UC CIT ST OB2 TK1 Y6: Add "Quality Topics" to the "Introduction to Engineering Practices and Principles I" course

UC CIT ST OB2 TK2 Y6: Upgrade team projects to require a multidisciplinary approach to problem solving

UC CIT ST OB2 TK3 Y6: Introduce undergraduate mentors into the course to assist with the project teams

UC CIT ST OB 3: Increase the quality of incoming freshman engineering students admitted to the COE

UC CIT ST OB3 TK1 Y6: Visit area high schools with presentations to promote engineering at UNC-Charlotte

UC CIT ST OB3 TK2 Y6 Y7: Produce and deliver the "Intro to ENGR" course to local high school students over Public TV

UC CIT ST OB 4: Continue to grow and develop the Mentoring Program to support "at risk" student populations

UC CIT ST OB4 TK1 Y6 Y7: Add additional mentoring resources for high-risk gateway courses both on and off campus

UC CIT ST OB 5: Involve the COE and student organizations in identifying, planning, developing, implementing and assessing transition strategies

UC CIT ST OB5 TK1 Y6 Y7: Develop and implement a student "Joint Engineering Council" to achieve the goals of the student professional organizations

UC CIT ST OB5 TK2 Y6 Y7: Provide opportunities for students to attend professional activities

UC CIT ST OB 6: Continue to develop the COE Technical and Professional Development Resources Library

UC CIT ST OB6 TK1 Y6 Y7: Expand the offerings of technical and professional development material in the COE library

UC CIT ST OB 7: Provide opportunities for students to interact with the local professional community

UC CIT ST OB7 TK1 Y6 Y7: Partner with alumni and local professionals willing to mentor and network with students

UC CIT ST OB 8: Promote experiential learning, beginning in the freshman year

UC CIT ST OB8 TK1 Y6 Y7: Develop experiential learning opportunities for freshmen and sophomores

UC CIT ST OB 9: Identify and develop resources to assure student proficiency in technical communications

UC CIT ST OB9 TK1 Y6 Y7: Develop a plan to provide technical communications proficiency support

UC CIT ST OB10: Develop and implement data storage, collection, retrieval and reporting for assessment of transition programs

UC CIT ST OB10 TK1 Y6 Y7: Identify, develop and implement additional data collection instruments and databases

UC CIT ST OB10 TK2 Y6 Y7: Assess the mentoring program on participant performance and retention, relative to control groups

UC CIT TBCD: Technology-Based Curriculum Delivery: Extend the reach and effectiveness of engineering education at UNC-C throught the use of advanced computing and communication technology

UC CIT TBCD OB1: Determine the technologies that may be utilized for distance education and enhanced curriculum delivery

UC CIT TBCD OB1 TK1 Y6: Investigate and evaluate the technologies being utilized at other sites

UC CIT TBCD OB1 TK2 Y6: Select appropriate technologies for UNC-C for on and off-campus curriculum delivery

UC CIT TBCD OB2: Identify the elements of an internet based distance learning training program for faculty and incorporate these elements into the UNC-C COE program

UC CIT TBCD OB2 TK1 Y6: Collect information on training for this campus and from other universities

UC CIT TBCD OB2 TK2 Y6: Develop the faculty training program and deliver the trial version to the faculty

UC CIT TBCD OB3: Install appropriate technology and support for internet-based distance education and collaboration

UC CIT TBCD OB3 TK1 Y6: Determine the infrastructure needs for internet based distance education and collaboration

UC CIT TBCD OB3 TK2 Y6: Install the technology base for distance and collaborative learning

UC CIT TBCD OB4: Test distance learning collaboratory technology

UC CIT TBCD OB4 TK1 Y7: Identify two courses and instructors to serve as a test of the technology

UC CIT TBCD OB4 TK2 Y7: Train the faculty (OB4 TK1 Y7) to use the equipment and deliver instruction

UC CIT TBCD OB4 TK3 Y7: Deliver the two courses to on, and off-campus sites using technologies and training

UC CIT TBCD OB4 TK4 Y7: Import resources for use of Asynchronous Learning Networks (ALN's) in all COE courses

UC CIT TBCD OB4 TK5 Y7: Develop a central integrated WWW server with capabilities identified in OB4 TK4 Y7

UC CIT TBCD OB4 TK6 Y7: Develop training for faculty in the use of ALN and facilities

UC CIT TBCD OB4 TK7 Y7: Deliver training to a group of faculty who want to employ ALN in appropriate courses

Virginia Tech

VA Tech CIT Mission: Implement SUCCEED's Curriculum Model at Virginia Tech

VT CIT FD: Faculty Development Plan: Establish a comprehensive and sustainable engineering faculty development program.

VT CIT FD OB1: Prepare faculty members to implement effective instructional methods and provide continuing support for their implementation

VT CIT FD OB1 TK1 Y6 Y7: Recruit teaching leaders and promote attendance of Faculty Development and other Coalition Focus Area workshops.

VT CIT FD OB1 TK2 Y6 Y7: Present faculty development workshops at Virginia Tech. Examples: College of Engineering Retreat, New Engineering Faculty Orientation, and Internet-Based Instructional Methods.

VT CIT FD OB2: Promote campus climate conducive to fulfilling the program mission.

VT CIT FD OB2 TK1 Y6 Y7: Motivate faculty to teach pilot courses and build learning community. Examples: Faculty share learning and teaching experiences at monthly meetings and through electronic support networks.

VT CIT FD OB2 TK2 Y7: Employ teaching leaders, trained in Felder/Brent workshops, to strengthen mentoring programs.

VT CIT FD OB2 TK3 Y7: Link Engineering Faculty Development activities with University programs. Examples of programs and grants: Faculty Development Initiative, Center for Excellence in Undergraduate Teaching, and Student Success Projects.

VT CIT OA: Outcomes Assessment: develop best practices for outcomes assessment of engineering graduates and methods for using these results for continuous improvement.

VT CIT OA OB1: Identify, develop, and test outcomes assessment measures, tools, and methods for critical success factors of engineering graduates.

VT CIT OA OB1 TK1 Y6: Participate in developing and pilot testing employer feedback project.
VT CIT OA OB1 TK2 Y6: Participate in developing and pilot testing portfolio pilot project.
VT CIT OA OB1 TK3 Y6: Participate in CFT OA workshop.
VT CIT OA OB1 TK4 Y6: Conduct OA planning workshop for degree programs.
VT CIT OA OB1 TK5 Y7: Implement pilot test of employer feedback project.
VT CIT OA OB1 TK6 Y7: Implement portfolio pilot project.
VT CIT OA OB1 TK7 Y7: Train faculty to develop and use outcomes assessment measures, methods, and processes to improve degree programs.

VT CIT OA OB2: Implement curriculum revision through use of results of outcomes assessment.

VT CIT OA OB2 TK1 Y6: Complete curriculum renewal in Mechanical Engineering and begin in Freshman Engineering.
VT CIT OA OB2 TK2 Y7: Continue curriculum renewal in Freshman Engineering Program and initiate in Engineering Science and Mechanics.

VT CIT ST: Student Transitioning Plan: Provide active learning environment, student support, engineering laboratory activities, vertically integrated multidisciplinary design activities, and connections to engineering practice.

VT CIT ST OB1: Establish an early engineering identity and expand the first-year transitioning to include explicit learning skill development and inculcate clear expectations.

VT CIT ST OB1 TK1 Y6 Y7: Implement and expand support for students at risk, college success strategies, and summer bridge program.
VT CIT ST OB1 TK2 Y6 Y7: Integrate engineering experiences in some sections of the Emerging Scholars Program (ESP) in Engineering Calculus (Math 1205).

VT CIT ST OB2: Provide students more access to real-world engineering design experience and engineering practice opportunities.

VT CIT ST OB2 TK1 Y6 Y7: Form and operate two virtual corporations: (1) the Distributed Information Systems Corporation (DISC) and (2) the Personal Rapid Transit Corporation (PERTS).
VT CIT ST OB2 TK2 Y6 Y7: Develop a multidisciplinary (engineering and building construction) pilot lab in hands-on statics. Integrate the hands-on lab in two sections of engineering statics.
VT CIT ST OB2 TK3 Y6 Y7: Implement a vertically integrated pilot course in building design, involving students in Civil Engineering and Architecture. Integrate practicing professionals and mechanical and electrical engineering aspects.
VT CIT ST OB2 TK4 Y6 Y7: Implement multidisciplinary (CE and EE), vertically integrated infrastructure pilot course involving testing and rehabilitation design. Integrate pilot course in Civil Engineering curriculum.
VT CIT ST OB2 TK5 Y6 Y7: Present workplace transition workshops for freshmen, transfer students, women, and seniors. Organize an engineering organizations fair. Present teaching and advising workshop for faculty.

VT CIT ST OB3: Improve/increase the exposure to engineering design, ethics, and professionalism in introduction to engineering courses.

VT CIT OB3 TK1 Y6 Y7: Transform the first freshmen engineering course into a problem solving course with hands-on laboratory experiences and connections to engineering practice.

VT CIT TBCD: Technology-Based Curriculum Delivery Plan: extend the reach and effectiveness of engineering education through the use of advanced computing and communication technologies.

VT CIT TBCD OB1: Enhance teacher-student and student-student communication using network-based collaborative environments for academic interaction.

VT CIT TBCD OB1 TK1 Y6: Implement Virginia Tech Tour of Engineering advising tool on the World Wide Web.
VT CIT TBCD OB1 TK2 Y6 Y7: Integrate Multimedia Statics in two sections of a structural mechanics course (ESM 3704). Test team teaching Multimedia Statics over the Internet with faculty at another SUCCEED institution.

VT CIT TBCD OB2: Empower faculty to develop electronic media-based instructional content.

VT CIT TBCD OB2 TK1 Y6 Y7: Develop and present a workshop on Internet-based instructional methods. Integrate workshop with the University's Faculty Development Institute (FDI).

Coalition Service Teams

Assessment and Evaluation

CST Assessment and Evaluation Mission: To conduct, promote and provide assistance in effective A&E of SUCCEED program efforts and impact at all levels of Coalition activity.

CST AE OB1: Perform Qualitative A&E of Coalition-wide program efforts including CFTs and CITs

CST AE OB1 TK1 Y6 Y7: Plan and Organize Campus Case Studies
CST AE OB1 TK2 Y6 Y7: Perform Campus Studies at Selected Institutions
CST AE OB1 TK3 Y6 Y7: Prepare and distribute campus reports to institutions visited
CST AE OB1 TK4 Y6 Y7: Prepare and distribute Summary Report to GTand NSF

CST AE OB2: Conduct Quantitative A&E of curriculum and educational reform impact through application of Coalition wide LDB

CST AE OB2 TK1 Y6 Y7: Identify appropriate areas and develop standard reports
CST AE OB2 TK2 Y6: Update LDB with 1996 - 1997 statistics from all institutions
CST AE OB2 TK3 Y6 Y7: Compare Qualitative case studies with Quantitative results
CST AE OB2 TK4 Y6: Prepare LBD for individual project access
CST AE OB2 TK5 Y7: Update LDB with 1997-1998 Statistic from all institutions
CST AE OB2 TK6 Y7: Conduct Additional LBD Project Studies

CST AE OB3: Promote, support and provide guidance and assistance to PIs, CITs and CFTs in performing effective A&E of their educational reform activities.

CST AE OB3 TK1 Y6 Y7: Create and Organize A&E Council
CST AE OB3 TK2 Y6 Y7: Help Develop and Revise CIT and CFT A&E Plans
CST AE OB3 TK3 Y6 Y7: Overview Plan Implementation
CST AE OB3 TK4 Y6 Y7: Provide Individual Project Assistance

CST AE OB4: Evaluate and make recommendations on transportability of SUCCEED produced products and processes for adoption and implementation of curriculum model.

CST AE OB4 TK1 Y6 Y7: Collect, Maintain and Distribute a catalog of SUCCEED products and results
CST AE OB4 TK2 Y6 Y7: Create an Innovation Diffusion Study process for evaluating the transportability of products and apply to examples
CST AE OB4 TK3 Y6 Y7: Apply IDS process to additional products in catalog
CST AE OB4 TK4 Y6 Y7: Provide recommendations to Dissemination Team on products studied
CST AE OB4 TK5 Y7; Conduct Bibliometric Study

Dissemination

CST Dissemination Mission: Facilitate the diffusion of educational innovation both internal and external to the Coalition

CST DS OB1: Assist PI's with strategic planning and action, for dissemination of key innovations.

CST DS OB1 TK1 Y6: Create CD-ROM "Best of SUCCEED" for dissemniation

CST DS OB2: Provide technology enhanced resources for internal and external dissemination

CST DS OB2 TK1: Expand information available
CST DS OB2 TK2: Simplify the retrieval of information
CST DS OB2 TK3: Support team networking/collaboration

CST DS OB3: Facilitate Internal Focused Dissemination through CIT interaction

CST DS OB3 TK1: Market Development's to the CITs
CST DS OB3 TK2: Serve as a resource to CITs in fulfilling their mission.

CST DS OB4: Provide External Focused Dissemination through interaction with the Council of Schools

CST DS OB4 TK1 Y6 Y7: Form partnership with selected schools to disseminate our products and cooperate with their educational revisions
CST DS OB4 TK2 Y6 Y7: Interchange information so that dissemination efforts focus on the desires of the COS member
CST DS OB4 TK3 Y6 Y7: Make an on-site visit to COS members after selecting the appropriate SUCCEED team
CST DS OB4 TK4 Y6 Y7: Plan and carry out follow-up activities to ensure the COS members and SUCCEED goals are fulfilled

CST DS OB5: Participate and strive for a leadership role in Inter-Coalitions interactions

CST DS OB5 TK1 Y6: Take a leadership role in seeking intercoalition cooperation
CST DS OB5 TK2 Y6: Facilitate creation of, and participation in, an Intercoalitions Liaison Board
CST DS OB5 TK3 Y6 Y7: Strive for a common project reporting format for the intercoalitions group, with the forms to be posted on the WWW
CST DS OB5 TK4 Y6 Y7: Provide leadership, and participate in, a common topical workshop to be rotated among the Coalitions

CST DS OB6: Disseminate SUCCEED educational innovations throughout the "Broad-based" Educational Community

CST DS OB6 TK1 Y6 Y7: Display SUCCEED products and services at National and International Coferences and Workshops
CST DS OB6 TK2 Y6 Y7: Hold and annual SUCCEED Conference to disseminate results and products
CST DS OB6 TK3 Y6 Y7: Publish and distribute "The Innovator", the SUCCEED newsletter

Appendix II

Endorsement of Strategic Plan by SUCCEED's External Advisory Board

April 22, 1998

Dr. Win Aung
Senior Staff Associate
National Science Foundation
4201 Wilson Boulevard, Suite 585
Arlington, VA 22230

Dear Dr. Aung:

This constitutes the 1998 Annual Report from the External Advisory Board of the Southeastern University and College Coalition for Engineering Education (SUCCEED). It has been our privilege to participate in this review of the SUCCEED program and to work with Dr. Tim Anderson and the rest of the SUCCEED Administrative Personnel.

I. Mission of the Advisory Board

The purpose of this Board is to review, advise, and approve SUCCEED's overall strategic and tactical plans. The members of the Board are all new this year. The Board's opinion regarding the five-year program is very positive based on this preliminary review of the strategic plan. The Board wishes to thank all of the individual presenters for their insightful overviews of each individual focus team's activities.

II. Strengths of the Program

The Board felt that SUCCEED has presented a very comprehensive and aggressive strategic plan with a clear set of objectives and goals. We feel that this program represents a unique opportunity in the academic sector, one that is based on a set of values that is appropriate for encouraging change in the engineering schools involved in the coalition and establishes a model for dissemination beyond the coalition. The four individual focus teams have been carefully selected and they reflect the key aspects of the overall learning process, critical to a successful engineering program. We are particularly pleased by the model selected for designing the Campus Implementation Teams (CIT). The inclusion on each CIT of representatives from each Focus Team results in a set of cross functional teams that provide the alignment and linkage necessary to ensure effective communication across the entire set of CITs.

The Board also feels that the coalition has defined a clear, reproducible process that can be shared among the members as well as with other schools across the country. The dissemination process described in the plan is critical to the delivery of the process information to the individual schools, and to the sharing of experiences from individual institutions.

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true methods that are easily adapted to individual classes.

IV. Recommendations

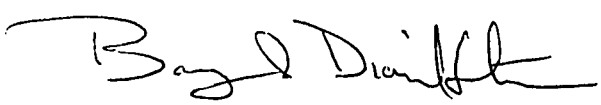
The Board has made two recommendations to SUCCEED based on the first annual review of the program.

The Board would like SUCCEED to make every effort to expand the focus of their program to include participants outside of the engineering community. This would include representatives from other academic departments, potential employers, students, high school counselors and other interested stakeholders. These representatives should be a focus of SUCCEED publicity regarding their accomplishments and they should be included in efforts such as workshops and information sharing sessions.

While the Board encourages the pursuit of new ideas, we feel that SUCCEED should expand their efforts to assess existing programs and resources on the campuses of participating schools before implementing new processes. This assessment should not be restricted to the engineering departments. Where appropriate, benchmarking should be done to establish best practices and, if practical, those resources should be incorporated in any actions steps planned for an individual school. The coalition should also look for opportunities to improve existing processes by enhancing efficiency and taking advantage of economies of scale.

The Board fully supports the efforts of SUCCEED. It is our privilege to serve as members of the Advisory Board during 1998 and we look forward to working with the entire SUCCEED organization and with the individual focus teams throughout the year.

Sincerely,



Barry I. Diamondstone
Chairman, External Advisory Board

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(over)